<div align="center">Homework Set 1

Please complete by class time on Thursday, Jan 28.</div>

1. We saw that the cardinality of a union satisfies the expression

$$|A \cup B| \ = \ |A| + |B| - |A \cap B|,$$

and that the cardinality of a union of three sets satisfies

$$|A \cup B \cup C| \ = \ |A| + |B| + |C| - |A \cap B| - |A \cap C| - |B \cap C| + |A \cap B \cap C|.$$

Write down an expression for $|A \cup B \cup C \cup D|$. Prove that this expression is correct, by deducing it from the expressions above and the distributive laws of unions and intersections.

2. Log on to the OU MathClub Blog and post a comment about one of the blog entries.
You can get to the Blog by clicking on the link on the course web page, on my home page, or on the main math home page, ...

Comments.

1. If some of this set theory and functions material seems rusty to you, then you should look over your notes from a past Discrete Math class. Alternatively, you could look for a book in the Math-Chem library with Discrete Mathematics in its title. There are lots to choose from.

   - QA 37.2 .D48 1992
   - QA 39.3 .D58 2006
   - QA 9.25 .E57 2006
   - QA 39.2 .J65 2005
   - QA 162 .D57 2003
   - QA 39.3 .L68 2003
   - QA 76.9 .M35 R67 1985
   - QA 164.8 .D57 1982

2. If you log on to the MathClub Blog, you'll notice that Frank Morgan (Williams College) is giving two talks this Thursday at OU (at 4pm and at 5pm in PHSC 1105). I strongly encourage you to attend these talks. Dr Morgan is very well known for his ability to engage an audience with cool mathematical topics.